

Austrian and the German meteorological societies. Jelinek died at the age of 59, October 19, 1876; and on March 1, 1877, Prof. Julius Hann succeeded him. Under his administration the institution, the meteorological society, and its journal became the leading authorities in this branch of science. Hann paid special attention to the development of mountain stations. Fifty-two high stations, 6 of which are more than 12,000 feet above sea level, were established under his initiative. He also established 25 stations with self-recording instruments in Austria. He was the first director who at the same time personally and completely filled the rôle of professor in the university. He collected about himself a large number of scholars who devoted themselves wholly to meteorology, forming an Austrian school that has had a wide influence in meteorology. His own investigations in climatology and meteorology have given him the highest position in this department of science. He resigned the directorship on account of poor health, in 1897, but after three years absence at the University of Gratz, his alma mater, he returned to Vienna. The aim of his successor, Professor Pernter, is to maintain the great reputation of the establishment for activity in scientific research as well as practical usefulness. Ever since the war of 1859 the Central Anstalt has been greatly hampered by the want of funds, but Dr. Pernter has been able to secure the means for making kite and balloon ascensions and thus extending to southern Europe the exploration of the atmosphere that has been actively carried on in Russia, Germany, and France. Twelve such Austrian ascensions were made during the year 1901. The memorial volume of the Central Anstalt, and the *Lehrbuch der Meteorologie*, also published at the same time, are already recognized as classics in the literature of the science. The Central Anstalt includes in its personnel, beside the director, Pernter; the vice director, Kostlivy; the scientific assistants, Margules and Felix Exner, (son of Prof. Franz Exner); the chief of the observatory, Pircher; the chief in charge of stations and publications, Valentin; the chief in charge of weather telegraphy and forecasts, Kostlivy. There are 26 paid employees of all grades. In addition to these, an honorary position has been established known as "Corresponding Member of the Institution." This was especially appropriate to Prof. Julius Hann, who was the first incumbent, March 22, 1901. But since that date many others have been happily associated with him, and the list of correspondents embraces all in Austria-Hungary who have distinguished themselves by work in meteorology.—C. A.

WEATHER BUREAU MEN AS INSTRUCTORS.

Mr. Charles Stewart, Observer, Spokane, Wash., addressed the Spokane Science Club, June 14, on "Meteorological instruments and methods of the Weather Bureau."

Mr. J. Warren Smith, Section Director, Columbus, Ohio, on June 4, delivered a lecture on meteorology, at the local office of the Weather Bureau, to the class in geology of the Ohio State University.

On June 17 he addressed a meeting of the Ohio Workers in Agriculture, explaining how forecasts are made and outlining the forecast distribution by means of telephones.

The faculty of Norwich University, at Northfield, Vt., has adopted the following resolution:

Resolved, That the thanks of the Faculty of Norwich University be extended to Mr. William A. Shaw, of the United States Weather Bureau, who has, without remuneration, taught meteorology in this institution, in an efficient manner, for the past eight years.

Mr. J. B. Marbury, Local Forecaster, Atlanta, Ga., lectured on July 1 before the Georgia Educational Association on "The Weather Bureau, its Relation and Benefits to the Public." He

explained how forecasts are made and distributed, showed the fallacy of the so-called long-range forecasts, spoke of the value of the Climate and Crop Service, and showed how useful to the public are the records of the Bureau, in addition to their value in forecasting.

METEOROLOGY IN THE COLLEGES AND UNIVERSITIES.

A letter from Mr. G. A. Loveland, Section Director, Lincoln, Nebr., dated June 23, says:

The University of Nebraska is now building a new physics building, with provision for this office and a department of instruction in meteorology. The professor of physics, D. B. Brace, is an investigator who has already encouraged students to work along meteorological lines. An article by one of his students has already been published in the *REVIEW*. I expect cooperation and help from Professor Brace and the students of his department, and hope for more rapid progress in developing meteorology as a department of instruction under these conditions.

A great aid to teachers and all users of the *REVIEW* would be cards (for a card catalogue) for each article in the *REVIEW* not relating to current weather conditions, or at least for the more important articles. I think all Weather Bureau stations furnished a file of the *REVIEW* should have such a card catalogue, and best of all the Weather Bureau stations constantly called upon for information should be furnished, if possible, with a card catalogue of the important articles in the whole file of *Reviews*, the reports of the Chief of Bureau, and bulletins of the Bureau. That is, all officials expecting to answer questions should have a card catalogue of the publications of the Bureau, that they may be able to consult authorities readily and answer questions promptly and efficiently. If the cards for each *Review* were printed at the same time the *REVIEW* was, a beginning in this direction would be made.

In 1903, the Secretary of Agriculture arranged for a course of instruction in meteorology in the department of agriculture of the North Carolina Agricultural and Mechanical College at West Raleigh at the request of the officials of that institution, and directed that the Weather Bureau send a competent man for that purpose. The college is a mile and a half west of Raleigh. Meteorological instruments for educational purposes were furnished by the Weather Bureau. Of course it was not intended to establish a regular observing station. Mr. C. F. von Herrmann, Section Director, was assigned to the duty of instruction and authorized to absent himself from the station as far as necessary in order to conduct the course. The original plan comprehended a full course for recitations of one hour, weekly, for thirty-six weeks, in the senior class, using Waldo's elementary meteorology as a text-book. In addition, a course of lectures to be given covering the following ten topics:

1. The atmosphere; composition, density, arrangement, physical properties, etc.
2. The temperature of the atmosphere.
3. The temperature of the atmosphere with reference to the climates of the earth.
4. The pressure of the air.
5. The moisture of the air, its condensation into frost, dew, fog, cloud, etc.
6. Precipitation.
7. Winds and the general circulation.
8. Weather; cyclones and anticyclones.
9. Local storms, thunderstorms, tornadoes, subtropical storms.
10. Climate.

Concerning this course of instruction, the professor of agriculture, Dr. Charles W. Burkett, under date of June 18, 1904, writes as follows:

The North Carolina Agricultural and Mechanical College now provides a course in meteorology that extends through the first two terms of the senior year. This course is required of all seniors in the agricultural course, and, personally, I think it is one of the most available courses, and one of the most important that we have in our agricultural course. The course in meteorology is now maintained through the kindness of the Honorable Secretary of Agriculture, who furnishes us the services of the director of the North Carolina section of the Weather Bureau. I am so convinced of the importance of meteorology that I look to see the

time when it will also be a part of the work in our engineering courses. We think these students would readily take to such instruction, and that as soon as it is commenced there will be a strong demand for it.

I think meteorology is just as strong a disciplinary as any other study in the course. I am not advised as to the professional career that is offered along that line, but it seems to me that there would be a reasonable demand for men trained in this line of work. I am anxious to see the time when more instruction can be given in meteorology, and that the same may become a part of the courses of study in all of our agricultural and mechanical colleges.

An article published in the *Chattanooga News* states that more courses in meteorology have been offered in the colleges of the United States than ever before, and probably still more will be offered next year. Yet the instruction now given is almost insignificant compared with the commercial importance of the subject. There are two reasons for this. Often none of the faculties care to study or have time to teach the subject. In fact, meteorology has not been developed by school men, but by a few scholarly men at the demand of commercial interests, and therefore from a utilitarian rather than a scientific standpoint. These men are more like business men than teachers, and do not come in touch with the youth of the land as the teacher does. Again, the demand for meteorological experts has been too small to cause a large demand for instruction in this science. The business man accepts what good he can get from weather forecasts, without realizing that increased attention to the subject in institutions of learning means more competent specialists and also a more intelligent use of the specialist's work. Of more than four hundred institutions in the United States authorized to give collegiate degrees, less than one-third offer a course of instruction in meteorology, and in only one of these does a teacher give all his time to this subject. Often the course is given in the form of lectures, without any attempt at practical work. Under such conditions no department of instruction can become large or efficient or contain enthusiastic students.

To increase the general knowledge of meteorology is to increase the efficiency of the Weather Bureau. Can this increased knowledge be accomplished best by an undergraduate or a postgraduate course? There is only one answer. An undergraduate course is essential; the postgraduate course will come in time if the first is successful.

The undergraduate course must be sufficient, but not require too much of the student's time, and must cover the subject so completely that the student will feel that his time has been well spent. The planning of the courses in meteorology is, we fear, often responsible for the small classes. Young people are critical, and they desire to spend their time where it can be done to the best advantage. A shorter course with a large class is better than a long, complete course and a small

class. In the former case, the few who wish the more extended course can take it in the next term.

In very much the same strain is the introduction by Prof. J. W. Gregory of the University of Melbourne, Australia, to his recent memoir on the Climate of Australasia, from which we take the following extracts:

The great educational controversy of the nineteenth century was whether study of literature and philosophy was of higher educational value than reasoning that can be checked by experiment and observation. The results of the battle were the admission of science into the old schools of learning and its predominant influence in all the new, a revolution in the methods of primary education, and a remarkable revival in classical research.

With the vast growth of the extent of science no student can keep in touch with it all. The problem that is now pressing upon us is the selection of the subjects that are of the most educational value. There are branches of science in which any progress is at once turned to practical account; while there are industries whose work is hampered because science does not give them as much help as it would had important lines of research not lagged far behind the rest.

Many teachers believe that the principles of a science can, in most cases, be best taught by the study of those branches of it that are of most practical service to man. To justify that belief the teaching of the technical subjects must be improved, and must give at all costs a rigorous training in scientific method. Most branches of applied science afford excellent educational material, for their results are tested daily by experiment on a scale vastly larger than science could afford.

I venture to introduce these general educational principles because they have especial application to geography. While in Australasia geography should be one of the chief subjects in elementary education, it should also receive more recognition as a good subject for the teaching of research. Geography on land has made excellent progress, owing to its practical value. The need for irrigation has caused the study of our rivers, which in some states, such as Victoria, have been investigated with unusual detail and accuracy. Interest in the rainfall has enlisted an army of volunteer observers, who collect rainfall statistics with admirable intelligence and patience.

Meteorology is that branch of geography in which, at present, the widest interest seems to be felt in Australasia, and in which well-directed research promises the richest reward.—C. A.

SILAS WEST.

[From the June report of the New England section of the Climate and Crop Service.]

The section director regrets to chronicle the death of Mr. Silas West, Voluntary Observer at Cornish, Me., who was one of the pioneers in meteorological work in this country. He was born July 29, 1820. He began his observations of the weather in 1856, and has continued, without a break, to the present time. He was greatly interested in the work, always punctual, and very faithful, as his complete forms will testify. During his service as a volunteer in the Federal Army—from September, 1862, to July, 1863—the work was carried on by his wife, and, in compliance with his expressed wish, it will now be carried on by his son, Mr. T. H. West.

CORRIGENDA.

MONTHLY WEATHER REVIEW for May, 1904, p. 213, column 2, fig. 76, 2d line of legend, for "great on the right lines" read "great on the circle as on the right lines."

THE WEATHER OF THE MONTH.

By Mr. W. B. STOCKMAN, District Forecaster, in charge of Division of Meteorological Records.

PRESSURE.

The distribution of mean atmospheric pressure is graphically shown on Chart VIII and the average values and departures from normal are shown in Tables I and VI.

The mean pressure for the month was highest over the north Pacific and northern Plateau regions, with a maximum mean of 30.16 inches. A secondary area of high mean pressure, but lower readings, overlay the States east of the Mississippi River. The mean pressure was low over the middle and southern Plateau regions and interior California, with the lowest pressure over southern Arizona, where mean monthly pressures of 29.72 inches occurred.

The mean pressure for the month was above the normal everywhere, except in southern Arizona, southern and central California, and southwestern Florida. Departures ranging from +.10 to +.14 inch occurred over southeastern Maine

and the middle slope and north Pacific regions. The greatest deficiencies in pressure were —.03 inch.

In North Dakota and the northern portion of the Missouri Valley, central and southern California, and southern Arizona the mean pressure diminished slightly from that of May, 1904. In all other districts the pressure increased, and the increases, as a rule, were more marked than the negative changes.

TEMPERATURE OF THE AIR.

The mean temperature was slightly above the normal in New York near lake Erie, southeastern Virginia, northeastern North Carolina, southeastern Louisiana, extreme southern Texas, southeastern Washington, and western Montana, and from +1.0° to +4.0° in central Idaho, Oregon, California, except the northwestern coast, western Nevada, and southern Arizona. In all other portions of the United States the mean